Appl. No. 10/646,617
Amdt. dated March 18, 2008
Amendment under 37 CFR 1.116 Expedited Procedure
Examining Group 2616

PATENT

REMARKS/ARGUMENTS

Claims 1-4, 17-20, and 33 are provisionally rejected on the ground of non-statutory obviousness-type double patenting over claims 1, 2, 4-6, 19, 20, 22-24, 35,3 6, 39, and 40 of co-pending US Patent Application No. 10/642,042.

Claims 1, 17, and 33 are rejected under 35 U.S.C. 102 as being anticipated by United States Patent 6,977,894 to Achilles et al. (hereinafter "Achilles").

Claims 1, 3, 10-13, 15, 17, 19, 26-29, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson (US Patent No. 6,577,596) in view of Valencia (US Patent No. 6,754,712).

Claims 2 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson in view of Valencia, and further in view of Kroll (US Patent No. 6,700,895).

Claims 4, 5, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson in view of Valencia, and further in view of Kim (US Patent No. 5,859,846).

Claims 6, 8, 9, 22, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson in view of Valencia, and further in view of Choudhury (US Patent No. 6,092,115).

Claims 6, 7, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson in view of Valencia and further in view of Suzuki (US Patent No. 5,140,584).

Claims 14, 16, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson in view of Valencia, and further in view of Xiong (US Patent No. 6,958,996).

Claims 1, 6-7, 10, 17, 22-23, 26, and 33 are amended. Support for the amended claims can be found throughout the application. Among other places, support can be found at paragraphs [0017]-[0023] and with reference to the figures. No new matter has been added.

As discussed below, Applicants believe all claims are patentable over the cited references. Regarding the rejections drawn to Olsson and Valencia, Applicants respectfully submit that the claims are allowable over the combination of these references, both in their

current and amended form. In particular, Applicants strongly disagree with the Examiner's characterization of Applicants' position concerning the Olsson reference at pages 22-23 of the Office Action. Accordingly, in the interest of advancing prosecution, Applicants have provided additional discussion of Olsson's deficiencies below.

Provisional Double-Patenting

Applicants acknowledge the provisional obviousness-type double patenting rejections and will make a determination regarding whether to file a terminal disclaimer at the appropriate time.

Rejections under Section 102

A.   Claim 1

Claim 1 recites a method for managing connections in a network. The method comprises "receiving a request packet for establishing a protocol-based connection; assigning the request packet to a selected one of a plurality of classes based upon a protocol of the requested connection; forwarding the request packet if the number of packets forwarded from the selected class in a predetermined time interval has not reached a first maximum count; and dropping the request packet if the number of packets forwarded from the selected class in the predetermined time interval has reached the first maximum count." Applicants respectfully submit that Achilles does not disclose at least these features.

Achilles discusses a method for discarding data packets using descriptors. When a packet arrives, it is stored in a buffer according to its size. See, Achilles at col. 3, lines 33-45. A stack pointer is allocated and a packet descriptor is created. Achilles uses three bits of the packet descriptor to serve as a "watermark indicator." The watermark indicator supplies information about the "current congestion level of the buffer memory 119 and free buffer pool 117." See, Achilles at col. 4, lines 63-67.

During periods of network congestion, Achilles drops packets using a "lookup key" that includes the watermark indicator. See, Achilles at col. 5, lines 14-27. Thus, if a user exceeds her contract traffic rate ("committed information rate"), her packets may be dropped

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depending upon whether there is a 'hit' or 'miss' on the lookup key which, in turn, is based upon the fullness of the system buffers. Id.

Achilles does not teach or suggest how request packets for establishing a protocol-based connection are handled. Unlike the claimed invention, Achilles does not disclose "assigning the request packet to a selected one of a plurality of classes based upon a protocol of the requested connection." Achilles does not classify request packets according to the protocol of the requested connection.

Achilles also fails to disclose forwarding/dropping request packets as claimed. As understood by Applicants, Achilles does not distinguish between request and non-request packets and does not make forward/drop decisions according to protocol-based classifications. Thus, Achilles does not disclose "forwarding the request packet if the number of packets forwarded from the selected class in a predetermined time interval has not reached a first maximum count; and dropping the request packet if the number of packets forwarded from the selected class in the predetermined time interval has reached the first maximum count."

B.   Claims 17, 33

Claims 17 and 33 recite limitations similar to those discussed in connection with claim 1 and each is believed allowable over Achilles for at least the reasons previously given. Specifically, claim 17 recites an apparatus for managing connections in a network. The apparatus has a data plane operative to "receive a request packet for establishing a protocol-based connection, assign the request packet to a selected one of a plurality of classes based upon a protocol of the requested connection." The data plane also forwards/drops request packets according to their protocol-based classification. Achilles does not disclose at least these limitations.

Claim 33 recites a system for managing connections in a network. The system includes "means for assigning the request packet to a selected one of a plurality of classes based upon a protocol of the requested connection; means for forwarding the request packet if the number of packets forwarded from the selected class in a predetermined time interval has not reached a first maximum count; and means for dropping the request packet if the number of

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packets forwarded from the selected class in the predetermined time interval has reached the first maximum count." Achilles does not disclose at least these features as previously discussed. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1, 17, and 33 under 35 U.S.C. 102.

Rejections under Section 103

A.   Claims 1, 17, 33

Independent claims 1, 17, and 33 stand rejected under 35 U.S.C. 103 as unpatentable over Olsson in view of Valencia. As discussed in response to the preceding Office Action, Applicants submit that the combination of Olsson and Valencia fails to disclose each and every claimed element, particularly as they relate to a maximum count and predetermined time interval. The combination of cited references also fails to disclose the specific limitations of the amended claims. Accordingly, Applicants respectfully submit that Olsson in view of Valencia does not render claims 1, 17, and 33 obvious.

Applicants maintain that the Olsson reference does not disclose forwarding/dropping packets based upon the number of packets forwarded from a selected class in a predetermined time interval. The Examiner argues that Olsson teaches these limitations by dropping a packet when the queue corresponding to its QoS class (D_N) is full. See, Office Action at page 22, lines 13-15; page 22, lines 17-19. Applicants respectfully submit that Olsson's approach is not based upon the number of packets forwarded from a selected class over a predetermined time interval. In other words, Olsson drops a packet when its QoS queue is full regardless of how many packets from that QoS class are forwarded over a 1 second interval, a 10 second interval, or a 100 second interval.

Applicants have carefully reviewed the passages from Olsson which are cited as teaching the claimed forward/dropping limitations and respectfully submit that none of them discloses a predetermined time interval and maximum count. See, Office Action at page 22, lines 12-14. At column 6, for example, Olsson notes that a process decides where to position incoming packets in queues 221-224 based upon their time-sensitivity such as whether the

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packets contain real-time or best-efforts data. See, Olsson at col. 6, lines 60-65. There is no mention of forwarding/dropping packets based upon a number of packets forwarded from the selected class over a predetermined time interval.

Regarding the passages from column 8, Olsson mentions that the selection of a particular queue D_N is based upon the time-sensitivity of the packet. See, Olsson at col. 8, lines 27-65 ("Packets with progressively greater degrees of time sensitivity may be scheduled in progressively higher priority queues with the highest sensitivity packets being scheduled to high time sensitivity queue D_1 514."). Olsson's scheduling decision thus determines to which queue the packet will be added. However, there is no mention of forwarding/dropping packets based upon a number of packets forwarded during a predetermined time interval.

At columns 9-10, Olsson discusses that packets are discarded if queues associated with different networking layers (i.e., , IP layer 510, PPP layer 520) are full, but that a fragmentation and interleaving scheme can be used to mitigate delay for time-sensitive packets. See, Olsson at col. 9, lines 17-42; col. 10, lines 30-40. Again, Applicants respectfully submit that this passage is not related to a number of packets from a particular class that are forwarded in a predetermined time interval.

At column 11, Olsson reiterates that forwarding/dropping packets is based upon whether or not a particular queue is full when a packet is received. See, Olsson at col. 11, lines 45-55 ("If the queue associated with the priority or classification of the packet is full, the packet may be discarded...If the queue associated with the priority or classification of the packet is not full header compression may be performed..."). There is no discussion of a predetermined time interval or forwarding/dropping packets based upon the number of packets from a selected class forwarded during a predetermined time interval.

Beyond these deficiencies, Olsson also fails to mention how *request* packets are handled and does not disclose that such packets are assigned to classes based upon a protocol of the requested connection. Since Olsson fails to disclose forwarding/dropping generic packets based upon a number of packets forwarded from a particular class in a predetermined time

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interval, it follows that Olsson does not disclose forwarding/dropping request packets in the manner claimed.

Valencia fails to cure Olsson's deficiencies. As previously discussed, Valencia is directed to a tunneling network access server. Valencia does not disclose that request packets are assigned to classes based upon a protocol of the requested connection. Valencia also fails to disclose forwarding/dropping request packets based upon a number of packets forwarded from a selected class in a predetermined time interval.

Accordingly, Applicants respectfully submit that Olsson in view of Valencia fails to disclose each and every element of the rejected claims, both in their current and amended forms, and therefore the combination does not render the claims obvious. Applicants strongly disagree with the Examiner's characterization of Applicants' position at pages 22-23 of the Office Action. It is hoped that preceding discussion will help to further clarify differences between what is required in the claims and what is disclosed in the combined references.

B.   Claims 2-16, 18-32

Claims 2-16 and 18-32 depend from claims 17 and 33, respectively. Applicants submit that 2-16 and 18-32 are allowable over the cited references for at least the reason that they depend from allowable base claims. In this regard, it is respectfully noted that all remaining claim rejections add references which further limit Olsson in view of Valencia, and that none of these tertiary references cures the deficiencies previously identified in the base combination. Accordingly, reconsideration and allowance of claims 2-16 and 18-32 is respectfully requested.

C.   Claims 6 and 22

With regard to claims 6 and 22, Applicants respectfully submit that neither Olsson nor Valencia discloses forwarding a packet only if the number of active connections has not reached a second maximum limit. Olsson does not mention forwarding/dropping request packets based upon the number of active connections. The Office Action cites Valencia for this limitation. See, Office Action at page 13 (citing Valencia at col. 4, lines 30-50). However, in the cited passage, Valencia does not mention a number of active connections at all, much less deciding if a packet should be forwarded based upon the number of active connections. The

passage from Choudhury also fails to disclose this limitation.   Accordingly, Applicants respectfully submit that claims 6 and 22 are allowable over the cited references for at least this additional reason.

    D.   Claims 10 and 26

        With regard to claims 10 and 26, Applicants submit that Olsson in view of Valencia does not teach or suggest the further claim limitations directed to an additional packet and pass-through class. The Examiner argues that Olsson assigns packets to a pass-through class by placing them in a lower priority queue (e.g., queue D_4). See, Office Action at page 23. However, the claimed additional packet is "associated with the requested protocol-based connection." As best understood, packets in different ones of Olsson's priority queues D_N are not related to the same connection. Rather, lower priority queues carry different types of traffic than higher priority queues. See, Olsson at col. 7, lines 30-35; col. 8, lines 39-52. Thus, contrary to the claims, Olsson does not disclose that lower priority queues represent "additional packets" which are associated with connections serviced by the higher priority queues and likewise does not disclose the existence of a pass-through class. Accordingly, Applicants respectfully submit that Olsson in view of Valencia fails to disclose the claimed "assigning the additional packet to a pass-through class."

        As a further basis for distinction, Applicants submit that Olsson in view of Valencia fails to disclose "forwarding the additional packet even if the first maximum count or the second maximum limit has been reached." As noted by the Examiner, claims 10 and 26 require forwarding the additional packet in relation to only one (not both) of the first maximum count or the second maximum limit. See, Office Action at page 23. Applicants respectfully submit that the combined references fail to disclose either forwarding alternative.

        As discussed in connection with claim 6, neither Olsson nor Valencia mentions forwarding packets based upon the number of active connections. Thus, neither reference discloses "forwarding the additional packet even if the...second maximum limit has been reached." With respect to the first maximum count, the Examiner has previously equated this with the size of Olsson's priority queues. See, Office Action at page 9. Under this

interpretation, the claimed additional packets cannot be forwarded (even) if the first maximum count has been reached because there would be no place to store them while they are processed. As noted above, Olsson forwards packets only from priority queues and drops packets when the priority queues are full. Thus, the combined references cannot forward packets "even if the first maximum count...has been reached" as required in the claims. Accordingly, Applicants respectfully submit that Olsson in view of Valencia fails to disclose "forwarding the additional packet even if the first maximum count or the second maximum limit has been reached."

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,

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